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ABSTRACT

The changing structure of Southern farming amid the pressures of the farm crisis produces an information gap that has forced policymakers to rely on trial and error in institutional design. Existing data systems monitoring the farm sector either use the county as the primary observation unit, or they survey different individual farmers each year. A more useful strategy would have state experiment stations use primary data collection in a longitudinal design to survey farmers and the rural economy. Primary data collection is costly in terms of time and labor. However, the farm-level survey is a necessary tool for examining such issues as the debt situation among individual farmers, the role of nonfarm work in farmers' financial well-being, the adjustment of people leaving farming, the effect on small beef producers of the loss of beef as a tax shelter, the relationship between land tenure and conservation practices, and the effects of changing farm structure on market structure. In addition, the high visibility of surveys at the farm level should generate funding from state and private sources. The paper includes 22 references. (SV)

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The Restructuring of Southern Agriculture:

Data Needs for Economic and Policy Research

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[1]Invited paper for Southern Agricultural Economics Association meetings in New Orleans, Louisiana Febuary 1-3. Both authors are associate professors in the agricultural economics department at the University of Kentucky. Senior authorship is not assigned. Many of the ideas espoused in this paper are related to the authors' participation in a joint farm adjustment project between the departments of agricultural economics and sociology at the University of Kentucky. Lou Swanson and Valerie Vantreese are also leaders of the project and their input into the project and comments on this paper are greatly appreciated. We also thank Jim Christenson, Craig Infanger, Larry Sanders and Eldon Smith for their comments.

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The Restructuring of Southern Agriculture: Data Needs for Economic and Policy Research

Jerry R. Skees and Michael R. Reed

In considering farm structure issues and the need for policy and research, we concluded that the right questions were being asked by the profession (Bergland). Rather than generate another list of research and policy priorities, we decided that what is really needed is a discussion of the data used to address these policy and research questions. Therefore, this paper will focus on data needs for economic and policy research.

We argue that primary data collection by individual states is important in order to: 1) understand problems and monitor change; and 2) study farm-level behavior and relationships. These objectives require more than an occasional cross sectional survey. A panel design is required -- where the same farmers are surveyed to create a longitudinal data set. This means that survey support should be provided in prosperous periods for agriculture, as well as bad periods.

The paper will emphasize the role such data can play in understanding farm change and contributing to research and policy questions with particular reference to the South. Thus, we begin by examining data and information voids and follow with a quick review of existing farm sector data systems. Next, we briefly describe farm structure and changes in the South. The focus then turns to a discussion of costs and benefits of primary data collection. Much of the discussion of benefits will highlight salient questions which require farm-level and rural non-farm data.

Data and Information Voids

As the 1980's turned sour for agriculture, the University of Kentucky's department of agricultural economics was ill-prepared to respond to basic requests for information. Farm leaders, state government, the

media and Congressional representatives were anxious for information regarding those affected and the seriousness of the problems. When basic information is not available most of us resort to anecdotal information such as the "horror stories" of individual farmers as reported by the media. For those farmers to which the anecdotes referred the crisis was real. However, most farmers did not have serious debt problems and the anecdotes were unrepresentative of the general condition. Thus, development of solutions to the problem on the basis of anecdotal information is risky[2]. When information gaps exist, the role of agricultural economists is lessened in defining and addressing farm problems.

As Ruttan suggests, information gaps are a common occurrence in social science research. Problems develop without institutions (e.g., organizations and policies) capable of ready response. These new problems require new institutions or modifications in existing institutions, which generates a need for new data and information. However, researchers rarely anticipate all information required for new institutional development. This lack of research forces decision-makers to rely more on trial and error in institutional design -- increasing the cost of adjustment through inappropriate responses. Bonnen (1986) recognizes that good research contributes to better more rapid institutional development.

Love emphasizes the dearth of data and research in reacting to recent farm problems. He believes a better job of monitoring farms would have aided in anticipating their problems. Our Dean of Agriculture, who is an

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[2]We recognize that data are a necessary, but not sufficient, prerequisite to understand farm problems. A conceptual framework must complement quality data collection and analysis. This paper will assume a proper conceptual framework exists.

animal scientist, reflected on our ill-preparedness for the current farm problems by recalling how well the college responded to a recent outbreak of equine virus in the Kentucky thoroughbred industry. There was immediate recognition of the problem and our equine scientists had frozen viral samples from past years, which was used to develop an effective vaccine. The Dean simply could not understand why our department was not equally prepared to deal with economic problems of farmers. Unfortunately, the cures of social science problems are not as easily addressed as those of a social horse disease. However, readily available, basic farm-level data would have contributed to a better understanding of the problems and enhanced our credibility with the Dean and the State. In addition, such information could have provided effective input to address the problems.

We believe primary data collection on farmers and the rural economy by state experiment stations is essential to monitor and understand farm problems[3]. First, the need for preparedness is paramount. Monitoring change at the farm level would have increased substantially our understanding of the farm crisis. Second, when Colleges of Agriculture have their own data sets, they will be prepared to both identify and refine problems specific to needs in their state. Agricultural economists will not be left to the mercy of journalists and politicians for problem recognition and definition. Third, the responsiveness of the extension system is contingent upon up-to-date information regarding farm-level problems. Finally, primary data bases will serve as an input for a variety of research and policy issues in future years.

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[3]Most of our discussion on primary data assumes that sampling procedures will enable researchers to generalize about a population of farmers. However, prudence is required. When limited data on a select population are used to develop generalizations regarding farm problems, it is possible that primary data can contribute to more confusion than enlightenment. For example, a small sample from a single county will provide little more information than anecdotal analysis.

Existing Data Systems

Data systems exist to monitor conditions in the farm sector. The Census of Agriculture is a comprehensive documentation of conditions at a given point in time. However, data are aggregated to the county level, so farm-level ramifications are difficult to assess[4]. Furthermore, the Census is only taken every four to seven years and does not provide detailed information on adjustments that individual farmers have made or expect to make. Finally, there are significant lags of up to several years in the availability of Census data.

State Statistical Reporting Services (SRS) collect information on commodity and input prices, input use, acreages, yields, livestock inventories, etc. These data also use the county as the primary observation unit. Although more timely in tracking aggregate trends, these data have similar limitations as the Census of Agriculture.

USDA responded to the problems with Census and SRS data by establishing the annual survey on farm costs and returns, which is quite extensive. This survey concerns farm income and expenses, along with information on debts, assets and off-farm employment. Baum and Johnson argued that such information is important because not all farmers and rural residents are affected equally by events in the farm sector. While there is no question that the farm costs and returns survey has proven very useful in understanding farm problems, the survey sheds little light on adjustments that individual farmers are making or emerging difficulties that they will confront. The survey is taken from different farmers each

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[4]Researchers can obtain less aggregate data from Census by special request. The Census will create summaries which have as few as five farms aggregated. Thus, one procedure is to array farms by gross farm sales and obtain average values for five consecutive farms. Also, personnel in ERS have access to individual Census data through special arrangements.

year, rather than concentrating on the time-path of change for a set of individual farmers.

Some may argue that the USDA should be solely responsible for developing surveys to assess and monitor the changes in the farm sector through a centralized system such as the Agricultural Research Service. However, within and between region diversity creates monumental problems in survey design. It is naive to believe that a single survey instrument can address regionally-specific issues. The diversity of U.S. agriculture and farm problems justifies the land-grant concept of research in each state (Schuh). Therefore, we contend state experiment stations can and should supplement USDA efforts in information systems on farm change and that the USDA should support these efforts through the Cooperative State Research Service (CSRS).

Farm Change in The South

The diversity of farms within the Southern region helps to justify our argument that individual states need to collect primary data. The farm structure and resource questions which are important to Texas are very different from the questions which are important to Kentucky or Georgia. Farming is very different as one moves from the Plains to the Ohio Valley and down to the Coastal Bend.

In the next few years, the South may undergo more structural change than any other region of the country. There are more small scale farms in the South than any other region and there are regions of the South which are poised for rapid farm expansion. The trend towards a bi-model distribution in farm size in other regions will very likely be more pronounced in the South. Thus, it is appropriate to reflect on economic and policy research needs for farm structure adjustments in the South.

Using 1969 and 1982 Census of Agriculture data, Skees and Swanson describe how thirteen Southeastern states have changed.[5]. There has been a more rapid decline in Southern farm numbers and greater expansion in farm size (measured by acres) than in the rest of the country. A greater increase in hired labor and a greater decline in full ownership also distinguish the South from the rest of the U.S. Six farm types dominate the thirteen Southeastern states -- poultry and eggs, cash grain, tobacco, dairy, beef and cotton. There is much diversity among these farm types by state and farm sales category. Surely with this diversity we tread on uncertain footing if our policy analysis is based on state or regional farm type aggregation.

Costs of Primary Data Collection

Agricultural economists are reluctant to participate in primary data collection, and for good reason. Such enterprises are time-consuming and provide a basis for few immediate professional rewards in the existing merit evaluation and promotion system. Those who have designed survey instruments can attest to the time and effort required to construct, conduct, code and edit surveys. It is little wonder that researchers shy away from such laborious efforts to obtain primary data and why, with the high costs involved, administrators do not demand it[6].

Bonnen (1987) observes that the relative costs of empirical analysis using secondary data has fallen because of the technological innovations

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[5]Unfortunately, the 1982 Census of Agriculture is the most recent Census. This reinforces the argument concerning timeliness of Census data.

[6]There are a number of alternative sampling procedures which can be used -- mail, telephone, or personal surveys. Tradeoffs are involved. It is beyond the scope of this paper to address these problems. The Kentucky survey used the Dillman technique with a mail survey to maximize the response rate. After the sample size was adjusted for individuals who were inappropriate for the survey, a 65 percent response rate was obtained.

involving decreased cost and increased access to data processing while the costs of data collection have increased sharply because of time requirements and labor costs. Thus, the profession has become enamored with analytical techniques and has lost sight of the role of primary and quality data in providing a genuine understanding of farm problems. Bonnen (1975) criticizes the profession's reliance on aggregated secondary data (which are many times antiquated) for too much research. As Daniel Suits, a well-known applied econometrician, is fond of saying, "there is no reason to tip-toe through the garbage dump." That is, many econometric techniques are much more sophisticated than the poor quality data justify.

The Role of Primary Data in Identifying Problems and Understanding Adjustment

We believe that agricultural economists are unaware of some dimensions involved in many farm-level problems. Further, many problems which agricultural economists assume need solutions may not even exist. A farm-level survey can help determine whether problems exist and the extent of the problems. McCloskey argues that economists should be more survey-oriented. He is distraught by the trend in economics toward an increased use of assumptions which have no link to reality and little justification that a problem even exists. McCloskey suggests that economists should substitute more empirical evidence for "self-testimony" (theory) in research. The following sections highlight some issues which are best addressed through a farm survey.

Financial Problems

As discussed earlier, the current financial problems of Kentucky farmers demonstrated that our department was poorly prepared to answer basic questions about the changing status of farms. Reading media reports

of farm stress would have led one to believe that a large percentage of farmers were in imminent danger of losing their farms due to financial problems. The Kentucky survey showed that around 17 percent of the state's farms had debt/asset ratios of 40 percent or greater. Only one third of Kentucky's commercial farms (using the conventional cutoff of $40,000 or more in farm sales) had debt/asset ratios of 40 percent or greater, while 38 percent had ratios below 5 percent. While this is not to say that the cost-price squeeze did not affect the economic well-being of most farmers, the dire forebodings about revolutionary change in farm ownership took on a different character when these data were available.

Having a primary data base allowed us to provide detailed breakdowns of the debt situation in Kentucky. The Kentucky survey has helped identify the region, farm type, age of farmer, and size of farm with the most serious debt problems. Farm leaders have been very responsive to this information. Yet, this descriptive information only begins the process.

The project is a panel design -- meaning that the same set of farmers are resurveyed every two years (three surveys are planned). Thus, we will be able to identify possible strategies for individual farmers in effort to lower debt and survive in future years. Although this will not be as effective as freezing a viral strain to enable development of future vaccines, such efforts should provide information for future generations of farmers as they cope with the cycles of agriculture.

Human Concerns

Primary data can contribute towards a better understanding of farmer financial well-being, especially in the South. It is simply not sufficient to report average farm income as a measure of financial well-being. Off-farm income is more significant than farm income for many farm families.

Skees and Swanson report that 62.5 percent of farm operators in thirteen Southern states had some off-farm work in 1982. Since small scale farms dominate the South, the role of off-farm work is critical.

There is an emerging debate regarding the role of off-farm work (Barkley). Do people seek off-farm work to support their existing farms? Does off-farm work allow some of the smallest scale operators to farm? Is the rural residence and small scale farm providing a lower cost-of-living to rural residents? Is farming an income supplement to the typically low wage off-farm opportunities available in rural areas? Given the growth in farms in the South with fewer than 50 acres between 1974 and 1982 (Skees and Swanson), it would appear that there are people included in farm numbers who are returning to the farm after obtaining off-farm work. Policy makers need to understand these trends. If our profession is to provide insight into these important matters, it cannot let aggregate statistics mask the true picture of farm family financial well-being and the underlying basis of major changes. Primary data can provide valuable information regarding which farm families have off-farm income, why, and the type of employment.

Besides information on off-farm income, panel surveys will allow for follow-up on people who have quit farming. Data on the characteristics of people leaving farming are needed. Again, without this type of information the media will likely opt for a sentimentalist case study approach for portraying the problems of adjustment. Information on who is leaving farming and their well-being after leaving is crucial to understand the full ramifications of the crisis. Ekstrom et al. found that North Dakota farm families improved their income after leaving. Is the same true for the South? Would these conditions be the result of severe farm income declines or good alternatives?

An issue which is particularly relevant to the South involves the repeal of capital gains tax treatment for beef producers. Given that 33% of the Southern farms are beef farms and that 86% of the beef farms have gross farm sales less than $10,000, this policy change may result in a significant loss of farms. Without data on the characteristics of these farmers and the proportion of family income derived from the beef operation, it is difficult to assess the severity of these losses and the effects on the people involved. It is unlikely that beef farmers exiting from farming in the South will suffer seriously from this structural adjustment, particularly if these farmers are using beef as a tax shelter for substantial off-farm income or if they farm as a hobby.

Land Issues

Issues associated with land are particularly suited to analysis using primary data. The conservation title of The Food Security Act of 1985 should have more impact on the South than the rest of the country through conservation compliance, the conservation reserve program, and swampbuster and sodbuster programs. These programs are administered by SCS and ASCS on a field-by-field basis, thus farm-level research is crucial to understand relationships between program provisions, implementation procedures and conservation practices in each state.

Conservation and land tenure relationships are becoming more important as the percentage of full owner/operators decreases. Are land owner/operators better stewards of the soil than tenants? Studies have shown that people renting land are less likely to practice soil conservation methods (Ervin; Wantrup). Research using our survey of Kentucky farmers and farmland owners raises questions regarding these

conclusions.[7] Cantrell found that renters tend to farm higher quality land with fewer conservation problems. She also found that farmers who operated a high percent of rented cropland were more likely to use conservation tillage practices (a conclusion which runs counter to most land tenure doctrine). Since conservation tillage is the dominant recommended practice for conservation compliance in Kentucky, it would seem that renters of land are in a better position than owner/operators to comply. Without basic information on farm structure and land practices from the survey, this relationship would remain obscure.

Land tenure questions go beyond conservation issues. Land ownership patterns receive considerable attention in the popular press, especially for commodities like tobacco. Some critics of the burley tobacco program argue that the preponderance of non-farmers holding production rights is an indication that program modifications are needed. Questions of absentee ownership, concentration of ownership and land tenure patterns are common for other commodities too. Agricultural economists usually repudiate such concerns by quoting aggregate figures from distant years. Results from a survey of farmers and farmland owners can provide timely information about these concerns. A panel design survey provides information on what happens to the land as people quit farming.

Market Structure Issues

Primary data collection will help determine if the South is disadvantaged by the consolidation of agribusiness firms at the first-

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[7]The population for the Kentucky survey came from county ASCS offices. This list includes a substantial number of non-farmer landowners because all individuals owning a tobacco quota in Kentucky must be registered at their county ASCS office. This provided the opportunity to administer two questionnaires: 1) to farmers and 2) to non-farmer landowners. Other states may not have access to population frames which include non-farmer landowners.

handler level. The movement in farm structure toward a bi-modal size distribution, coupled with reductions in output levels in the South, has reduced the number of marketing outlets for farm production in many regions and increased the needed margins for those first-handlers remaining. Large scale farmers can serve as their own marketing agent, and by-pass these first-handlers, because of their scale of production, leaving very thin markets. However, smaller scale producers are wedded to the reduced number of higher margin first handlers. This is particularly true with grains in some areas.

Recent conservation and commodity programs have adversely affected the South's comparative advantage. The result has been fewer planted acres of row crops in recent years. These programs have had effects on other regions, but their effects do not have such serious ramifications on margins for first handlers since farms in other regions are larger. Panel data which examine the number of miles farmers must travel to obtain inputs and market output would provide a better understanding of market access.

The Role of Primary Data in Understanding Relationships

Agricultural economists are known for deducing relationships through ex-post observation. Questions such as: How are production decisions influenced by relative prices?; What are the impacts of inflation on land prices?; are normally addressed using aggregate, secondary data. McCloskey's suggestion that economists should spend more effort finding out what's going on in the real world is appropriate to agricultural economists. A panel survey of farmers will not only allow direct questions on the relationships farmers see between economic variables, but also provide time series observations of farmer actions to assess the relationships on a disaggregated basis. Understanding the forces which

shape expectations for the future, given a panel survey, will enhance research on the relationship between expectations and management decisions.

Our survey included questions on the factors influencing farmland prices. The survey also asked farmers for projections of interest rates, inflation rates, and farmland values for 1990. These projections, coupled with answers to questions on how those factors impact land prices, indicate that most farmers believe farmland prices will increase by 1990 due to higher commodity prices, not because of inflation or interest rate changes. We plan to use these data and other survey data to estimate relationships between expectations and farmland values.

Farm-Level Modeling

Typical farms are used and abused in a variety of fashions to model policy effects at the farm-level (Baum and Schertz). The most serious limitation of such research involves generalizing about aggregate effects on the farm sector. Too often, the typical farms used in the models are not representative, and/or obsure the structural heterogenity within the class they purport to represent.

Primary data can enhance farm-level modeling for policy in a number of ways. First, these data can be used to create an experimental design using several typical farms representative of sub groups within a region (or state). The data also provide information on the relative weights of each typical farm in calculating aggregate effects. Second, primary data provide better information on which to base critical behavioral assumptions. Simulation modeling in particular requires numerous assumptions regarding farm-level behavior. In most cases, the same assumptions are applied to all farms. There is reason to believe that farm behavior changes as farm structure changes (i.e., size, tenure, debt/asset ratios). Thus, surveys which include well designed questions on behavior

will enable the researcher to incorporate behavioral differences in typical farms.

Added Benefits to Farm-level Surveys

There are many additional benefits from a farm-level survey. One benefit is that the survey will be visible to farmers and farm leaders in the state. Benbrook observed that agricultural economists contribute little of direct value to farming -- agronomists increase potential crop yields, animal and veterinary scientists develop vaccines for livestock ailments, entomologists invent new pesticides. He believes that funding for agricultural economics research fluctuates as the agricultural community believes our discipline is making contributions to their well-being and the well-being of others. Thus, visibility helps obtain research support

Publications and media reports of survey results have generated much interest throughout Kentucky. The public and the college administration have visible proof that the departments of agricultural economics and sociology were monitoring the farm crisis and determining farmer opinions on various issues. These observers are interested in comparing survey results with the media's anecdotal coverage of the crisis in the early 1980's.

Love recognizes that the Extension Service, in particular, missed an opportunity to improve its image when it was slow to perceive the seriousness of the farm recession. Benbrook argues that such education is a primary job for agricultural economists. Agricultural economists need to educate the agricultural community on contemporary, or preferably future, issues, problems, constraints and opportunities.

Federal funding of agricultural research has declined in real terms since 1967 (Bonnen, 1986) and the recent targeting of funds toward competitive grants which exclude economic research is an indication that federal funds will continue to be tight in the future. This may change with a new administration, but most experiment station directors have learned that federal funding for agricultural research fluctuates, depending on which areas are "hot." The current emphasis for funding is research on molecular genetics and biotechnology. Research on farm structure and resource management must be more stable and long-term than can occur if researchers rely too much on uncertain federal funding.

Agricultural economists must look increasingly towards state-level support for research (Schuh). The visibility and positive reinforcement obtained from primary data collection which allows problem targeting and local specificity will increase support from the state. Surveys can be designed to feed into a research program generating publications leading to promotion and tenure, if enough resources are devoted to the project. These projects help move departments of agricultural economics off the black list of farm leaders and state legislatures, while adding significantly to disciplinary knowledge[8].

Substantial state funding of these surveys is warranted because much of the benefits from information obtained through the project will likely stay within the state's boundary. The federal government should provide funding to the extent that there are spillover benefits between states (Bonnen 1986).

Private support could be obtained for primary data collection. Agribusinesses are interested in determining the future needs of farmers.

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[8]Examples of recent published research using primary data include Kokoski; Cox and Wohlgenant; McCracken and Brandt; Lee.

It seems reasonable that they would prefer information directly from farmers on investment and production plans, along with general information about farmer use of inputs, rather than aggregate estimates from university, USDA, or private economists. Farm machinery manufacturers have been hurt in recent years when their production plans have not matched the purchasing plans of their farm clientele. Results of farmer surveys could have provided needed information for manufacturers to revise production plans.

Summary and Conclusions

Agricultural economists have relied far too much on aggregate data for their research. One simply can't say much about farm structure without farm-level data. Through direct involvement in survey design and data collection, the researcher is forced into a continual reevaluation of his/her paradigm of farm structure and policy issues. This process improves the research design and the resultant output, especially if panel procedures are followed. This is the iterative approach to research.

Understanding farm structure and farm-level behavior should be a continual, integral component in policy design as decision-makers give more attention to the implementation phase of policy. This procedure will help us reduce the information lag Ruttan has identified. If we are successful, institutions will be easier to change and the changes will have fewer design errors.

The diversity of farms makes it imperative that primary data be used in providing information and supporting applied research programs. These issues are particularly relevant for Southern agriculture today with farm conditions changing so rapidly. Development of new agricultural institutions requires knowledge of micro-level behavior and we can learn more about that behavior from primary data.

In addition, to improving our understanding of behavior -- which we contend can improve our research-- basic information regarding the farm sector will enhance our role in identifying problems. If we are to be more useful to the agricultural community we must play a primary role in identifying and refining problems.

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